Security by Correctness

Security by Isolation

Security by Obscurity
• Development started in 2010

• Made by Joanna Rutkowska et al
  • Low-level security
  • Blue Pill
  • Xen security
  • Intel TXT & Intel SMM
Windows, OSX, Linux

One attack can own everything
Separate your digital life into security domains
• sys-vpn
• router
• red
• personal
• email
• work-web

• chat
• mullvad-dev
• printer
• server-admin
• sys-backup
• vault
• proj-*

• Disposables
Free-space path loss in decibels

A convenient way to express FSPL is in terms of dB:

\[
FSPL(dB) = 10 \log_{10} \left( \frac{4\pi d f}{c} \right)^2
\]

\[
= 20 \log_{10} \left( \frac{4\pi d f}{c} \right)
\]

\[
= 20 \log_{10}(d) + 20 \log_{10}(f) + 20 \log_{10} \left( \frac{4\pi}{c} \right)
\]

\[
= 20 \log_{10}(d) + 20 \log_{10}(f) - 147.55
\]
Introduction to Qubes OS 2

Joanna Rutkowska
Invisible Things Lab
Passwords: The only constant in life

According to a survey (German language link) conducted by research institute Fans on behalf of the German Bitkom industry association, 41% of Germans have changed their access codes to their online bank accounts, mailboxes, auction sites, PCs or mobile phones since they have to. Only one in six users (16%) changes important PINS and passwords at least once every quarter. "Fidelity doesn’t pay when it comes to passwords – the most important passwords should be changed every three months", said Dieter Kempf, a member of Bitkom’s presiding committee.

One in twelve users (8%) only changes access codes every few years, while one in nine (11%) at least change them annually. Six per cent change their passwords every six months on average, nine per cent change them quarterly, seven per cent monthly, and one in a hundred users even changes them weekly. The survey found that women change their most important passwords more frequently than men: One in eight users (13%) changes them at least once every quarter (men: 8%). According to Bitkom, teenagers and young adults are particularly at risk – one in ten users (10%) only change passwords every few years.
Authentication required by Wi-Fi network

Passwords or encryption keys are required to access the Wi-Fi network 'ZTE_1A7C'.

Password: ____________________

- Show password

[Connect] [Cancel]
There are no updates available
Software updates correct errors, eliminate security vulnerabilities and provide new features.

All software is up to date
There are no software updates available for your computer at this time.
[Dom0] Settings: work

**Basic Tab:**
- Allow network access except...
- Deny network access except...

**Advanced Tab:**
- Allow ICMP traffic
- Allow DNS queries
- Allow connections to Updates Proxy

**Firewall rules Tab:**

<table>
<thead>
<tr>
<th>Address</th>
<th>Service</th>
<th>Protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td>18.9.60.141</td>
<td>pgpkeysrvr</td>
<td>tcp</td>
</tr>
<tr>
<td>192.168.1.0 /24</td>
<td>any</td>
<td>any</td>
</tr>
<tr>
<td>66.111.4.51</td>
<td>any</td>
<td>any</td>
</tr>
<tr>
<td>66.111.4.52</td>
<td>any</td>
<td>any</td>
</tr>
</tbody>
</table>

**Buttons:**
- Add Rule
- Edit Rule
- Delete Rule

**OK**
**Cancel**
Thank you!